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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09:892,630	06/28/2001	Seigi Aoyama	3008-28	4486
20457	7590	01/02/2004	EXAMINER	
ANTONELLI, TERRY, STOUT & KRAUS, LLP 1300 NORTH SEVENTEENTH STREET SUITE 1800 ARLINGTON, VA 22209-9889			DINH, TUAN T	
			ART UNIT	PAPER NUMBER
			2827	

DATE MAILED: 01/02/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

09/892,630

Applicant(s)

AOYAMA ET AL.

Examiner

Tuan T Dinh

Art Unit

2827

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☐ Responsive to communication(s) filed on \_\_\_\_.
- 2a) ☐ This action is **FINAL**.      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 2,4,5,7 and 14-19 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 2,4,5,7 and 14-19 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. §§ 119 and 120**

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
a) ☒ All    b) ☐ Some \*    c) ☐ None of:  
1. ☒ Certified copies of the priority documents have been received.  
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_.  
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).  
\* See the attached detailed Office action for a list of the certified copies not received.
- 13) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application) since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.  
a) ☐ The translation of the foreign language provisional application has been received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121 since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)      4) ☐ Interview Summary (PTO-413) Paper No(s) \_\_\_\_.
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)      5) ☐ Notice of Informal Patent Application (PTO-152)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) \_\_\_\_      6) ☐ Other: \_\_\_\_\_

### DETAILED ACTION

The office action mailed in 07/02/03 is hereby withdrawn.

#### ***Claim Rejections - 35 USC § 102***

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(a) the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for a patent.

2. Claims 2, 14-17, and 19 are rejected under 35 U.S.C. 102(b) as being anticipated by Matsuzaki (JP-03255637 A, hereafter JP)

Regarding claim 2, JP discloses a solder (an abstract) comprising:

an alloy composition containing: 0.002-0.015% by mass of phosphorus (0.01 to <1.0% by mass) with the balance consisting of tin, wherein said alloy excludes bismuth (Bi).

Regarding claim 14, JP discloses the solder in the abstract the alloy composition further containing: 2.0 to 5.0% by mass of silver (Ag-0.5-6.0% by mass) and 0.01 to 2.0% by mass of copper (Cu-1.0% by mass).

Regarding claims 15-16, and 19, JP discloses the solder as explained in claims 2 and 14, the abstract of JP discloses the solder comprising:

0.002-0.015% by mass of phosphorus (P);

2.0-5.0% by mass of silver (Ag);

0.01-2.0% by mass of copper (Cu);  
tin, wherein the alloy composition excludes bismuth, and the tin forms the balance of the composition.

Regarding claim 17, JP discloses the solder as explained in claims 2 and 14, the abstract of JP discloses the solder consisting of:

0.002-0.015% by mass of phosphorus (P);

2.0-5.0% by mass of silver (Ag);

0.01-2.0% by mass of copper (Cu); and tin

### ***Claim Rejections - 35 USC § 103***

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claims 4-5, 7, and 18 rejected under 35 U.S.C. 103(a) as being unpatentable over Kenji et al (hereafter PA, figures 1 and 2 submitted by applicant) in view of Matsuzaki (JP-03255637 A, hereafter JP).

Kenji discloses a connection lead as shown in figures 1-2 comprising:  
a copper strip (1) or other strip conductor; and  
a plating (2a, 2b) provide on at least one side of the strip conductor, said plating being formed of a lead-free solder composed mainly of tin, and has a shape such that the plating in a widthwise direction of the strip conductor having a bulge formed of an

arc, a triangle, or stairs as viewed in section with an apex being located at a proper position in the widthwise direction of the strip conductor.

Kenji does not show said plating containing 0.002 to 0.015% by mass of phosphorus, 2.0-5.0% by mass of silver, 0.01-2.0% by mass of copper, with the balance consisting of tin excluding bismuth.

JP teaches a solder containing 0.002 to 0.015% by mass of phosphorus, 2-5% by mass of silver, 0.01-2% by mass of copper, and balance of tin excluding bismuth, as explained above.

It would have been obvious to one having ordinary skill in the art at the time the invention was made to have teaching's JP to employ the connection lead of PA for the purpose of improving thermal fatigue characteristic of a solder.

### ***Response to Arguments***

5. Applicant's arguments with respect to claims 2, 4-5, 7, and 14-29 have been considered but are moot in view of the new ground(s) of rejection.

Applicant argues that the Nagai reference does not anticipate claims 2, 14-17, and 19 in the response filed in 10/02/03. Examiner agrees that the arguments are moot, but not in a new ground rejection set forth above.

### ***Conclusion***

6. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Kawashima et al. and An et al. disclose related art.

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Any inquiry concerning this communication or earlier communications from the examiner should be directed to Tuan T Dinh whose telephone number is 703-306-5856. The examiner can normally be reached on M-F.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Kammie Cuneo can be reached on 703-308-1233. The fax phone number for the organization where this application or proceeding is assigned is (703) 872-9306.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-0658.

A handwritten signature in black ink, appearing to read 'Tuan Dinh', followed by a long, sweeping diagonal line extending towards the upper right.

Tuan Dinh  
December 23, 2003.